ART. XVII.—*On the Structure and Use of the Spleen.* By HENRY GRAY, F. R. S., Demonstrator of Anatomy, and Surgical Curator of the Pathological Museum of St. George's Hospital. London, 1854. 8vo. pp. 380.

THIS admirable work, for which the physicians and surgeons of Guy's Hospital awarded to its author the munificent prize endowed by the late Sir Astley Cooper, is an honour to British science. For elaborate research and experiment, it is not excelled by the famous labours of Lyonnet in the anatomy of the *Cossus ligniperda*. The investigations of previous writers have given us correct notions of the anatomical structure of the spleen—and, indeed, most of the results of the researches of Mr. Gray and his coadjutors; but none have so systematically, patiently, and accurately unravelled its structure and functions, as the latter.

After an historical introduction, the development of the spleen and its various tissues are first considered; and results of the author's observations clearly prove that the organ does not attain its maximum of development during fœtal life, and that its conditions of utility need not be sought for during that period. He further adds: "If it be admitted that the spleen, like other organs, is performing its function to the fullest possible extent when it attains its largest size, and when it arrives at its maximum of development and growth, then it is proper that we should observe at what period this occurs." A table is then presented of one hundred and sixty observations by which, and others of a similar character, the author arrives at the following conclusions:—

"1. That the size, and consequently the activity of the spleen, are called into action from the period of birth to the termination of adult life.

"2. That its size, and consequently its function, are periodically manifested, and increased during and after the completion of the digestive process.

"3. Its size varies considerably according to the state of nutrition of the body, being increased in highly fed, and being diminished in starved animals.

"4. Independent of these extremes of size, consequent upon the nutrition of the body, it increases considerably after the completion of the digestive process in the highly fed animals; whilst in the opposite case, no difference in its size is observed."

The structure of the spleen is next minutely investigated, the results of which very generally accord with the researches of Kolliker, Ecker, Gerlach, &c.

In the chapter on the bloodvessels of the spleen, the author confirms the fact that each of the main trunks of the splenic artery supplies simply that region of the organ in which that branch ramifies, no anastomoses existing between it and the majority of the other branches.[1] The capillaries terminate by becoming continuous with the smaller venous trunks; but, as previously mentioned by Ecker, some of them cannot be traced directly continuous with the veins, and these communicate with interspaces of the pulp parenchyma which are finally connected with the veins.

From a number of experiments on horses it is shown that the quantity of splenic blood varies under different circumstances. The greatest amount exists in the organ just after the completion of digestion, and the new material has been received into the circulation. The smallest amount is found long after the digestive process has ceased, and the new material has been expended in nutrition, secretion, &c. The quantity also varies with the character of the nutrition of the animals; in ill-fed animals being small, and in those which have been starved, it is reduced to its minimum. The introduction of fluids, also, especially such as are quickly absorbed, considerably influences the increase of the blood; and, of course, while the direct transfusion of blood into the circulation increases that of the spleen, its withdrawal in a corresponding degree decreases it.

[1] Several preparations by Dr. Horner, in the Museum of the University of Pennsylvania, are beautifully illustrative of this fact.

The spleen is likewise found to act as a reservoir for blood when the circulation is obstructed as a consequence of impeded respiration. Experiment alone does not exhibit this result, for it is observed that diseases of certain organs, as the heart and liver, attended with obstruction to the circulation, are in all cases accompanied with enlargement of the spleen, and distension of its vessels.

From numerous analyses it was ascertained that the emerging blood of the spleen, as compared with the arterial blood entering the organ, and with the blood of the general venous and portal systems, presents the following peculiarities. It contains less solid matter than arterial or other venous blood, far less blood-globules, a considerable increase in the amount of albumen and fibrin, more fat, a variable amount of iron; and lastly, its serum presents in all cases a dark-reddish tinge.

An attentive study of the splenic pulp confirms the view of Kolliker, that the blood-corpuscles undergo disintegration in the spleen; and it is to this cause we must attribute the peculiarities of the splenic venous blood when compared with that which enters the organ.

After investigating the structure of the Malpighian corpuscles, and determining the laws which regulate their variation in size, the author considers that his results afford sufficient evidence of the glandular nature of these bodies, and of their close similarity in structure and function with the corpuscles of other ductless glands.

The last chapter of the work is on the physiology of the spleen; and in this the author enters into a consideration of the facts resulting from his labours, and concludes that the function of the spleen is to regulate the quantity and quality of the blood. J. L.

ART. XVIII.—*Epilepsy and other Affections of the Nervous System which are marked by Tremor, Convulsion, or Spasm—their Pathology and Treatment.* By CHARLES BLAND RADCLIFFE, M. D., Licentiate of the Royal College of Physicians, Assistant Physician to the Westminster Hospital, Lecturer on Materia Medica and Therapeutics at the Westminster Hospital School of Medicine, etc. etc. London, 1854. 8vo. pp. 144.

THOSE of our readers who have had an opportunity of perusing Dr. Radcliffe's treatise on *The Philosophy of Vital Motion*, are aware that he has advanced a new and somewhat startling theory of muscular motion. That muscular contraction is a purely physical phenomenon dependent on ordinary molecular attraction when the muscle is *not* stimulated. That the real operation of nervous and other vital agencies, and of electricity and other physical forces, is not, as usually taught, to excite or stimulate contraction in muscle and other organic tissues, but to counteract this state, and induce relaxation or expansion. In other words, that all stimulants, vital and physical, so far from producing, on the contrary antagonize, muscular contraction, which occurs only upon the suspension or withdrawal of the action of the stimulants, in a manner perfectly analogous to that which takes place in a bar of metal when heat is withdrawn.

This physiological heresy, an exposition of which prefaces the proper subject of the essay before us, is enforced and illustrated by a series of arguments and illustrations of a most acute and plausible character, which cannot but arrest attention, even though they fail to carry conviction of the truth of Dr. Radcliffe's theory of vital motion.

Upon that theory is based, in the volume before us, the pathology and treatment of epilepsy, and other nervous affections marked by tremor, convulsion and spasm, as, the tremors of delicate and aged persons, chorea, paralysis agitans, delirium tremens, the rigor and subsultus of fever, the tremor of mercurial poisoning, the convulsions of fever, of hydrophobia, of saturnine and hydrocyanic acid poisoning, and those dependent upon the retention of urea